Message

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Sent: 6/18/2020 5:44:52 PM
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Subject: Pyrolysis Question

FYI – This is the pyrolysis question we faced in Maricopa County recently. All of the work we did to answer the question seems to have come to naught since the facility never applied for a permit.

Problem Statement

A business that converts plastic to fuel (Renewlogy) is looking to build a new facility in the Phoenix area. They will be diverting plastic from a local municipal solid waste landfill, shredding it and using it as a feedstock for a pyrolysis process for the production of fuels, chemicals and other intermediates. The initial throughput will be about 10 tons/day. MCAQD met with Renewlogy on 7/31/19 and described the air permitting process and rules that may apply. After a few e-mail exchanges in which we requested additional information, nothing more was heard and it was assumed that the project was not moving forward. On 12/6/19 the source contacted us and communicated that they still intended for the project to proceed. MCAQD agreed to obtain clarification of federal rule applicability from EPA. This meeting is scheduled for Jan 13, 2020.

The facility requires an air permit to operate in Maricopa County. Based on an analysis of applicable air quality rules it appears that the facility would be subject to NSPS Subpart EEEE - Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006. If this is the case the facility would need to operate under a Title V permit per §60.2966 of the rule.
https://www.ecfr.gov/cgi-bin/text-idx?SID=2114e2ee6454c99f2d75836383c944f0&node=sp40.7.60.eeee&rgn=div6

The facility is claiming that they do not meet the definition of a "Solid Waste Incineration Unit" because (according to them) the plastic feedstock is not a solid waste it is a raw material. They appear to be making this argument based on RCRA standards rather than those of Subpart EEEE which state:

> *Municipal solid waste* means refuse (and refuse-derived fuel) collected from the general public and from residential, commercial, institutional, and industrial sources consisting of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustible materials and non-combustible materials such as metal, glass and rock, provided that: (1) the term does not include industrial process wastes or medical wastes that are segregated from such other wastes; and (2) an incineration unit shall not be considered to be combusting municipal solid waste for purposes of this subpart if it combusts a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal solid waste, as determined by §60.2887(b).
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> *Solid waste* means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1342), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. 2014).
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> *Refuse-derived fuel* means a type of municipal solid waste produced by processing municipal solid waste through shredding and size classification. This includes all classes of refuse-derived fuel including two fuels:

(1) Low-density fluff refuse-derived fuel through densified refuse-derived fuel.
(2) Pelletized refuse-derived fuel.

Based on these definitions, it seems fairly clear that plastic feedstock is "refuse-derived fuel" which is considered "municipal solid waste" is a "solid waste".

Response from EPA (Nabanita Modak - Modak.Nabanita@epa.gov)
EPA Region 9 received an e-mail from Maricopa County Air Quality department on August 1, 2019 that stated that Renewology is planning to install a plastics-to-fuel plant near a City of Phoenix recycling facility, essentially using pyrolysis to convert plastic to fuel. The maximum capacity of the plant is 10 tons per day. Their position is that the recycled plastic is a commodity feedstock and not a solid waste. The county reached out to EPA to get some guidance on the applicability of Subparts EEEE to this project. EPA did not receive any technical details such as process flow diagram, process description, equipment specifications, site lay out and etc. about this particular project. However, EPA received technical details about a similar project that has been proposed to be constructed and operated by Sustane Chester Inc. (Sustane) in Canada. The Project will be located within the Municipality of the District of Chester (MODC), approximately 20 km north of the town of Chester, NS at the existing Kaizer Meadow Environmental Management Centre (KMEMC), in Sherwood, on a 4.99 ha parcel of land (PID 60704418) registered under the Municipality of the District of Chester and leased by Sustane. EPA has reviewed the technical details of Sustane project details and based on those details EPA does not believe subpart EEEE applies to Renewlogy - Waste Plastic-to-Fuel System near a City of Phoenix recycling facility.

Subpart EEEE does not define pyrolysis /combustion units. However, 70 FR 74876 and 70 FR 74877 specifies that pyrolysis/combustion units (two chamber incinerators with a starved air primary chamber followed by an afterburner to complete combustion) within the VSMWC and IWI subcategories are considered OSWI units. However, the process description / technical details described in the Sustane document indicates that the primary chamber (primary and secondary reformers as described in the document) is not followed by an after burner or thermal oxidizer. Instead, primary chamber is followed by a condenser and excess gas from condenser is routed to a thermal oxidizer. The document describes that the Condenser receives the Reformer Gas after undergoing pyrolysis in the Primary and Secondary Reformers. Gas which passes through the condensing stages is mainly composed of propane and methane and is considered a NCG. NCG is then utilized within the process and excess NCG sent to the thermal oxidizer (Section 2.4.9) for destruction. Based on this information, EPA believes the primary chambers (primary and secondary reformers) and the afterburner (here, thermal oxidizer) are not closely coupled and therefore the unit will not be subject to subpart EEEE.

Please note this guidance only based on information received about Sustane unit, which may or may not be what Renewology ultimately constructs in Maricopa County.

Maricopa County AIR QUALITY DEPARTMENT

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